

REMARKS

Before discussing the subject matter recited in the claims of this application and as a preface to commenting on the issues raised in the most recent Official Action, the following general overview is provided of features and operational characteristics associated with the interferometer embodiment illustrated in Figs. 2A-2C of the present application.

The interferometer includes a beamsplitter 10, an end reflector 11 constituted by plane reflectors, a first angle reflector 14, and a second angle reflector 15. The first angle reflector 14 and the second angle reflector 15 are each constituted by plane reflectors which reflect the beams between the beamsplitter 10 and the end reflector 11, and are each rotatable around an axis ω . As illustrated in Fig. 1, the angle line A3 of the end reflector 11 is arranged perpendicular to the angle lines A1 and A2 of the first and second angle reflectors 14 and 15.

Turning now to the claims, independent Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,075,598, hereinafter Kauppinen.

Claim 10 recites a method in an interferometer including guiding optical beams through use of a first and a second angle reflector, constituted by plane reflectors, by reflecting the optical beams off the first and the second angle reflector, guiding the optical beams reflected from the first and the second angle reflector through use of at least one end reflector, constituted by plane reflectors, by reflecting the optical beams off the at least one end reflector, and changing an optical path difference between the optical beams by rotating the first and the second angle reflector around an axis. An angle line of the at least one end reflector is perpendicular to an angle line of both of the first and the second angle reflector.

Fig. 10 of Kauppinen illustrates an interferometer having a pair of mirrors 12, 13 connected to a mirror 14 so that the mirrors 12, 13, 14 form a uniform rotating structure with angles of 90 degrees between the mirrors. The Kauppinen interferometer also includes two retroreflecting plane mirrors 11', 11", and a beamsplitter 10 for dividing a light beam from a light source into two separate beams S1, S2 and for combining the retroreflected beams into an interference beam.

The Official Action takes the position that mirror 12 in combination with one half of mirror 14 together form a first angle reflector, that mirror 13 in combination with the other half of mirror 14 together form a second angle reflector, and that the retroreflecting plane mirrors 11', 11" together constitute an end reflector formed by plane reflectors. However, even assuming some basis exists for these interpretations, Claim 10 is distinguishable.

Namely, Claim 10 recites that an angle line of the at least one end reflector is perpendicular to an angle line of both of the first and the second angle reflector. As discussed above, each of the retroreflecting mirrors 11', 11", taken individually, is simply a plane mirror and therefore does not have an angle line. Moreover, even assuming the angle between the two retroreflecting plane mirrors 11', 11" can be considered an angle line of a retroreflector, it is clear from a careful study of Kauppinen's Fig. 10 that such an angle line is clearly parallel to the angle line formed by mirror 12 and one half of mirror 14, and also clearly parallel to the angle line formed by mirror 13 and the other half of mirror 14.

Accordingly, Kauppinen does not disclose a method in an interferometer wherein an angle line of the at least one end reflector is perpendicular to an angle

line of both of the first and the second angle reflector, in combination with the other features recited in Claim 10.

Claim 10 is therefore allowable over Kauppinen, and withdrawal of the rejection of Claim 10 as being anticipated by Kauppinen is respectfully requested.

Claims 1 and 11, the other two independent claims, are rejected as being unpatentable over Kauppinen in view of U.S. Patent No. 6,469,790, hereinafter Manning.

Claim 1 recites an interferometer including at least a beamsplitter, at least one end reflector for returning beams, and a set of reflectors for reflecting the beams between the beamsplitter and the at least one end reflector. The set of reflectors includes a first and a second angle reflector, constituted by plane reflectors, and the at least one end reflector is a third angle reflector constituted by plane reflectors. An angle line of the at least one end reflector is arranged perpendicular to an angle line of both of the first and second angle reflector, and the first and the second angle reflectors are rotatable around an axis.

Claim 11 recites an analyzer including an interferometer having at least a beamsplitter, at least one end reflector for returning beams, and a set of reflectors for reflecting the beams between the beamsplitter and the at least one end reflector. The set of reflectors includes a first and a second angle reflector, constituted by plane reflectors, and the at least one end reflector is a third angle reflector constituted by plane reflectors. An angle line of the at least one end reflector is arranged perpendicular to an angle line of both of the first and the second angle reflector, and the first and the second angle reflectors are rotatable around an axis.

The Official Action again takes the position with respect to Kauppinen that mirror 12 in combination with one half of mirror 14 together form a first angle reflector, that mirror 13 in combination with the other half of mirror 14 together form a second angle reflector, and that the retroreflecting plane mirrors 11', 11" together constitute an end reflector formed by plane reflectors. The Official Action also correctly notes that the retroreflecting mirrors 11', 11" do not comprise an angle reflector constituted by plane reflectors. The Official Action goes on to take the position that it would have been obvious to an ordinarily skilled artisan to have substituted the roof reflector 80 of Manning for the retroreflecting mirrors 11', 11".

This is not so.

First, Manning teaches away from the proposed combination by disclosing that when a roof reflector is used, the interferometer becomes sensitive to rotation of the roof reflector about axes parallel to the incident beams, as discussed in lines 63-66 of column 12 of Manning. In other words, Manning teaches that replacement of a flat return reflector as illustrated in Fig. 19 with a roof reflector as illustrated in Fig. 20 actually results in degraded performance of the interferometer.

More importantly, it is clear from a careful study of Kauppinen's disclosure that if Kauppinen's retroreflecting mirror 11 made up of plane mirrors 11' and 11" is replaced with Manning's roof reflector 80, and the roof reflector 80 is arranged in such a way that its angle line is perpendicular to the angle line formed by mirror 12 and one half of mirror 14, as well as the angle line formed by mirror 13 and the other half of mirror 14, the interferometer would no longer work at all because the light beams S1 and S2 would no longer interfere.

In view of the above, the Official Action's proposed combination would not have been obvious to an ordinarily skilled artisan.

Accordingly, Claims 1 and 11 allowable over Kauppinen in view of Manning, and withdrawal of the rejections of Claims 1 and 11 is respectfully requested.

The dependent claims are allowable at least by virtue of their dependence from allowable independent claims. Thus, a detailed discussion of the additional distinguishing features recited in the dependent claims is not set forth at this time.

Early and favorable action with respect to this application is respectfully requested.

Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application, the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: October 9, 2009

By: Peter T. DeVore
Peter T. deVore
Registration No. 60361

Customer No. 21839
703 836 6620